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Japanese persimmons

F H. Burnette

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Agricultural Experiment Station

OF THE

Louisiana State University and A. & M. College,

BATON ROUGE.

Japanese Persimmons

F. H. BURNETTE

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Japanese Persimmons.

F. H. Burnette.

For a number of years Japanese persimmons have been grown throughout the Southern States. For eighteen years a number of varieties have been grown at the State Experiment Station. Nearly all of the varieties grown have fruited, and although there is great confusion concerning their names, enough has been learned concerning some of the well-established varieties, to publish this brief statement of their growth and productiveness.

The Japanese persimmons were introduced into this country by the United States Department of Agriculture, largely through the efforts of Prof. H. E. Van Deman, while he was in charge of the pomological work of that department. They were grown in various sections, but it was soon found that they would not thrive well very far north of the 36th degree of latitude, hence they have been grown to some extent, more as a curiosity or novelty than as a commercial product. A zero temperature is very injurious to them—in many cases fatal.

In Louisiana they have been grown for a number of years. but not as an orchard fruit. The great abundance of the native persimmons which can be obtained so easily, and the natural taste which prevails for the native product also—have tended to prevent any widespread interest in the culture of the Japanese persimmon. In Japan, as a fruit, they have the same standing that apples possess in the Northern United States, hence are of great economic importance. They are grown in great abundance, and are put to many and varied uses. The Japanese methods of treatment to correct the astringent qualities of the unripe fruit are not fully understood in America, but investigations now in progress will determine the steps that are necessary to accomplish this object, and one of the greatest drawbacks to the growing of the fruit will thus be eliminated.

Being so very prolific, easily grown, and having such excellent qualities for transportation, there should be nothing to hinder the extension of their culture, for the Northern markets as well as for local consumption.

It is confidently believed, that easy and successful treatment will be brought out, that will correct the astringency of the fruit before softening, and thus present a fruit that is healthy and luscious and capable of being put to a large number of uses.

CONSIDERED BOTANICALLY.

There are a large number of species in the genus to which the persimmon belongs, but only two are mentioned as of any economic importance, native to America, and two likewise native of the Orient. These are:

Diospyros Virginiana—The native wild persimmon of the Southern States.

Diospyros Texana—Wild persimmon of Texas.

Diospyros kaki—Japanese persimmon.

Diospyros Lotus—Chinese persimmon.

Everyone in Louisiana is thoroughly acquainted with the native persimmon, and as this bulletin has to deal with the foreign species, nothing especially will be said concerning the native, unless it is to mention that they are very much neglected, and unfortunately so, as there is no doubt but that they are capable of being greatly improved by selection, cultivation and crossing. A fruit that varies naturally so much in size and quality, some day will be taken more vigorously in hand and numerous valuable varieties secured and perpetuated. There are at present about twenty varieties of our native persimmons cultivated locally in various parts of the United States.

The two foreign species mentioned have been growing at the Louisiana Station for several years, the *kaki* so far being the one of value.

Specimens of *Diospyros Lotus* (?) were sent to the Station by the United States Department of Agriculture in 1897. Only one tree proved to be pistillate. These trees were grown from seeds obtained by the United States Department of Agriculture at Niu Chuang, China.

It fills the description given for *Diospyros Lotus,* differing

slightly in growth, as the trees at the Station are fairly vigorous and upright growers. It is therefore mentioned here as belonging to *Diospyros Lotus*. It is said to be hardier than *kaki*, and used as a stock for it in Japan. The fruit is very small (see cut No. 1), quite black, and of no value. It has not been used as stock at the Station.

Ordinarily, the Japanese persimmon does not grow to be a large tree. Occasionally, however, a good sized tree may be seen. Being such abundant bearers, the drain upon the tree serves to curtail the growth, and some of the varieties are little better than dwarfs. The complaints of short life of the trees, and the tendency to become dwarflike are no doubt due to over-productiveness.

The leaves of the *kaki* vary much in size and are much larger and heavier than those of our native species. The foliage is generally a dark myrtle green, and gives the tree value as an ornamental. The varieties differ as to their ability to throw off leaf diseases, some of them being very resistant. The flowers appear on the new growth and are very numerous, usually in ency, flavor and texture. Some are flat, others long, others usually they tend to bear not only to the limit of the strength of the tree, but very often overtaxing the tree.

The fruit varies in size, color, earliness of maturity, astringency, flavor and texture. Some are flat, others long, others round. Some are yellow fleshed, others orange, others tending to dark red with brown streaks. Some are edible when yet green, others are slightly astringent, others very astringent. Some ripen early in September, while others will hang on the tree almost to January. No fruit is more variable in all of these points, and up to the present there has been no classification of the fruit that is perfectly satisfactory.

METHODS OF PROPAGATION.

The universal practice in the propagation of Japanese persimmons now, is to use seedlings of our native species for stock. At first they were grown on their own roots, but the abundance of native, hardy stock was taken advantage of, and is now used. It is said that in Japan, the Chinese persimmon is often used, being hardier than the Japanese. The Japanese persimmons

work readily upon our native stock, and as the latter is so abundant, hardy and rapid in growth, it leaves little to be desired as a stock.

The common method of propagation is to whip graft upon the whole root, about two inches below the surface of the ground. This is practically the only method used on a large commercial scale in persimmon nurseries. This is done very early in the season before growth starts, usually in January, sometimes later. Some growers do not wax the graft, only using common twine to tie, in order to hold the parts in close contact, and adjustment, the twine decaying by the time that a union is established. In fact, any method of underground grafting may be used with success.

The persimmons do not take very kindly to methods of budding. It is true that some propagators bud and are quite successful with them, but it requires every care and attention, with mank risks to run and dangers to overcome. Ring budding, performed late in summer—usually about August—is the method employed. It may be said also that this method in early spring has been tried by some growers. There is no doubt, however, but that root grafting is the most desirable from many standpoints, chief among them being the fact that if anything happens to the young tree through accident or otherwise, the variety is usually saved by a sprout coming from the base of the young tree above the point of union.

If anything happens to a young budded tree, the chances are that the value of the tree is lost by the losing of the bud An accident is very apt to happen with unreliable labor or from farm animals. Seeds of the native persimmon are obtained and sown in nursery rows. The seedlings are worked generally the second year, or if large enough, one year from seed. This depends entirely upon the size of the seedling. The aim is to secure a vigorous seedling, work it, and one year from the time of root grafting, have a young tree suitable to move from the nursery row to the place of permanent growth.

CARE.

Plenty of room should always be given, usually twenty or twenty-five feet apart.

There are a few points in the care of the Japanese persimmon tree that need emphasizing. They should be set young, and great care should be exercised that the setting be given the closest attention. Being a pronounced tap-rooted plant, the necessity of great care in setting is apparent. The roots should never be allowed to become exposed to the air and sun, and in setting, the mellow moist earth should be well firmed around them. Too much emphasis cannot be placed upon the need of setting young trees, and not resetting them, unless the necessity for doing so is beyond adjusting. Occasionally inquiries come to the Station concerning the transplanting of persimmon trees after several years' growth. While this may be done, it is certainly accomplished only by the greatest risk to the tree.

Good clean culture is all that is required, the same that is given in any well-cared for fruit orchard. In our heavy lands, or on soils similar in character to the soils of the bluff lands of Louisiana, sodding over should never be allowed, if good crops are desired. Any good complete manure may be used. A good crop of cow peas turned under every two or three years will be highly beneficial. No experiments have been undertaken to find out the exact fertilizer requirements, but it is believed a well-balanced fertilizer, suitable for orchard purposes, should be the one used. The Station orchard has received no commercial fertilizers, the only treatment has been the turning under of occasional crops of cow peas, and a light coating of autumn leaves removed from the University campus. No other dressings have been used.

During the first three years the growth of the tree should be watched, in order to build a symmetrical, upright tree.

This is not easy, for some of the varieties spread too much, and the leading upright branches are often overloaded and become broken easily, or are headed back by careless removal of fruit. Ordinarily, after they begin to bear, there is little need of pruning. The tendency to overbear is so strong, that new wood is not produced in abundance, and the tree becomes dwarf-like. Systematic thinning of the fruit is necessary to control this, as it will not do to leave the thinning to natural causes, and depend upon the tree to throw off all the fruit that it can not well take care of. The weakened condition from overbearing

results in a sickly tree which readily becomes an easy prey to diseases and insects, and it requires a careful observer to train his tree and thin the fruit to the proper amount.

VARIETIES.

There has always been a great deal of confusion concerning the names of the Japanese persimmons, and it may be that some of these listed in this bulletin may be known under other names. Along with the varieties first obtained at the Station, was one known as *Among*. This is not listed in the catalogues now, the *Tsuru* bearing the same description that fits the *Among* that was sent to us.

This confusion of names is not to be wondered at, however, as the Japanese names are not easy to remember, spell or pronounce, and a great deal of trouble might have been saved by giving an American name.

The following is a list of varieties that have been grown at the Station:

COSTATA. (FIG 2.)

This is a fruit of medium size, slightly pointed, diameter varying from two to three inches, color of skin a light orange yellow, flesh also of light color. It is seedless (Fig. 3), strongly astringent until fully ripened, and keeps late. The tree is a good grower, prolific bearer, and makes a fine appearance in full fruit. Season, October 10th-November 10th .

HACHIYA.

This variety is very large and when in full fruit makes a striking appearance. Fruit is a reddish yellow, fine specimens measuring four inches in diameter and oblong; flesh, deep yellow, with occasional seeds. Also astringent until it softens. Season, September 20th-November 20th.

HYAKUME. (FIG 4.)

The *Hyakume* is also one of the largest of the Japanese persimmons. The tree is very prolific and shapely. Fruit approximately three inches in diameter and somewhat conical. Color of skin, light reddish yellow; flesh quite dark (Fig. 3) and seed-

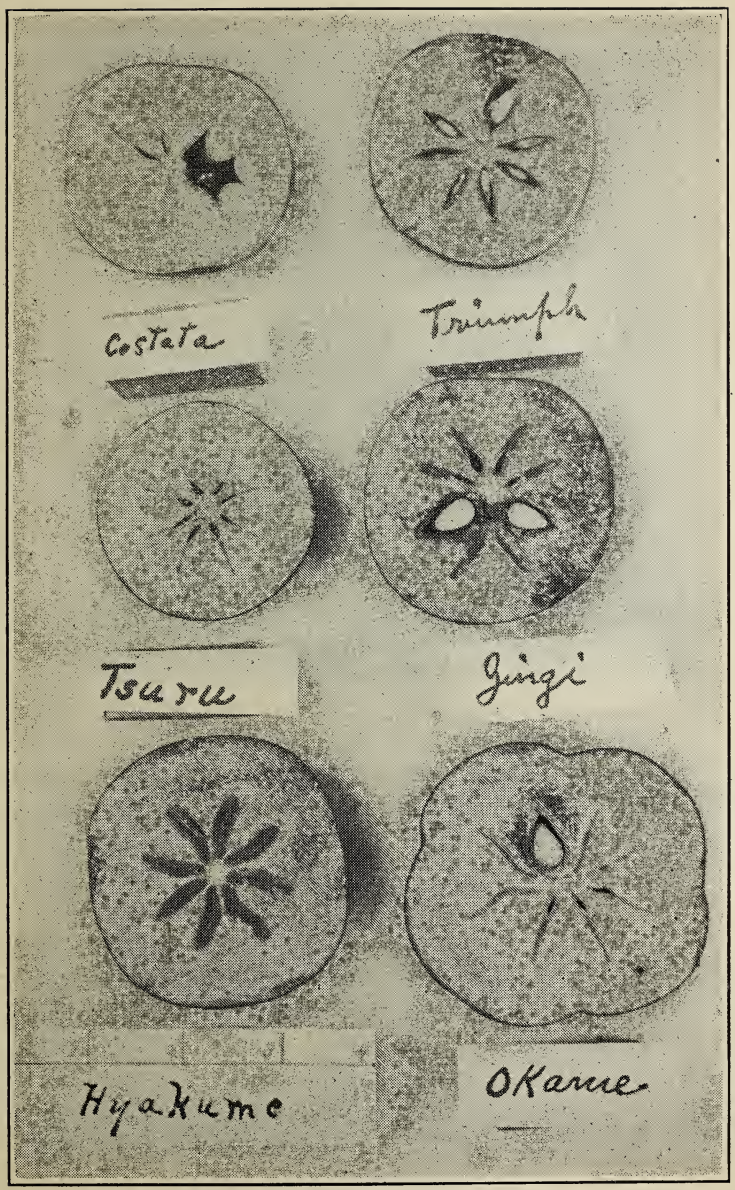
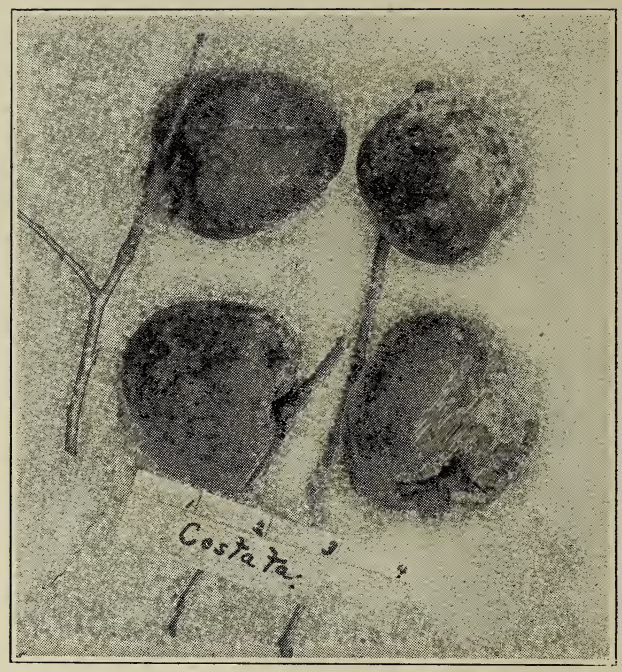


FIGURE 3.



COSTATA. (FIG. 2.)

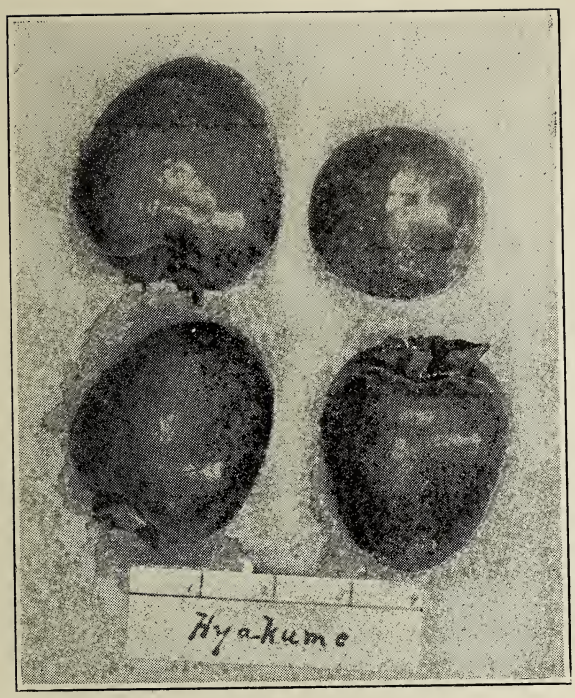
less. It loses its astringency early and has a good flavor. Some specimens may be pealed and eaten before softening. Season, October 15th-November 15th. A very desirable variety.

MYOTAN. (FIG. 5.)

This variety is not a strong grower, but is usually quite prolific. Fruit is nearly round and runs about two inches in diameter. Color is dark reddish yellow, and flesh is dark red with brown streaks, has numerous seeds, and is edible when hard. Has no astringency noticeable. May be pealed and eaten the same as an apple and has a pleasant flavor. Season, September 1st-October 15th.

NERO ZAMI.

This variety was one of the first planted in the grounds and



HYAKUME. (FIG. 4.)

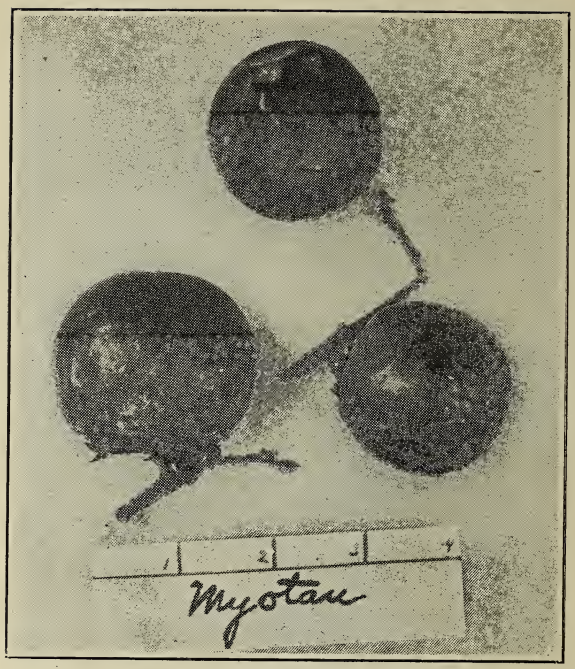
proved to be a weak grower. Fruit is small, nearly round, dark red in color, dark flesh and many seeds. It resembles the *Myotan* in size and appearance. Not prolific and not desirable. Season September 20th-October 20th.

OKAME. (FIG 6.)

This is a large tomato-shaped persimmon, usually three to three and one-quarter inches in diameter, flat and with quarters well marked. Tree a vigorous grower and very prolific. Color of fruit is a dark orange red, and flesh is deep yellow, with only now and then a seed (Fig. 3). Astringent until ripe. Season, September 20th to November 1st.

TABER, NO. 23.

This is a seedling grown and sent out by G. L. Taber, Glen



MYOTAN. (FIG. 5.)

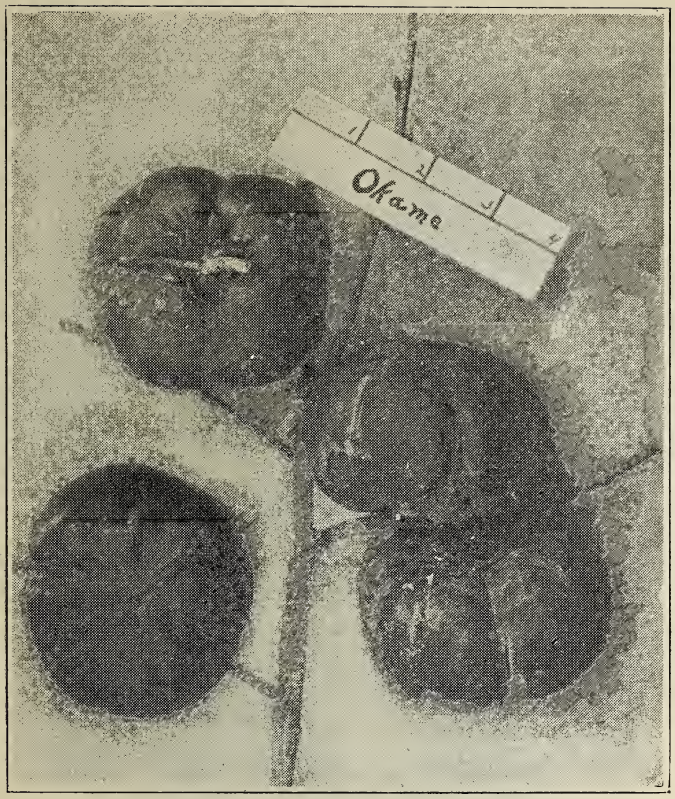
St. Mary, Florida. Color, dark red; flesh, dark, full of seeds and prolific. Not astringent. Season, September 15th to October 15th.

TABER. No. 129.

This is another seedling grown by G. L. Taber of Glen St. Mary, Florida. It is round and runs from two to three inches in diameter. It is dark in color, and the flesh is also dark and is edible when hard and immature. Season, September 15th to November 1st.

TANE NASHI. (FIG. 7.)

This is one of the large persimmons, nearly round, with a very small pointed tip, and about three and one-half inches in diameter. Color is a yellow red, bright and attractive; flesh also light in color, and seedless.



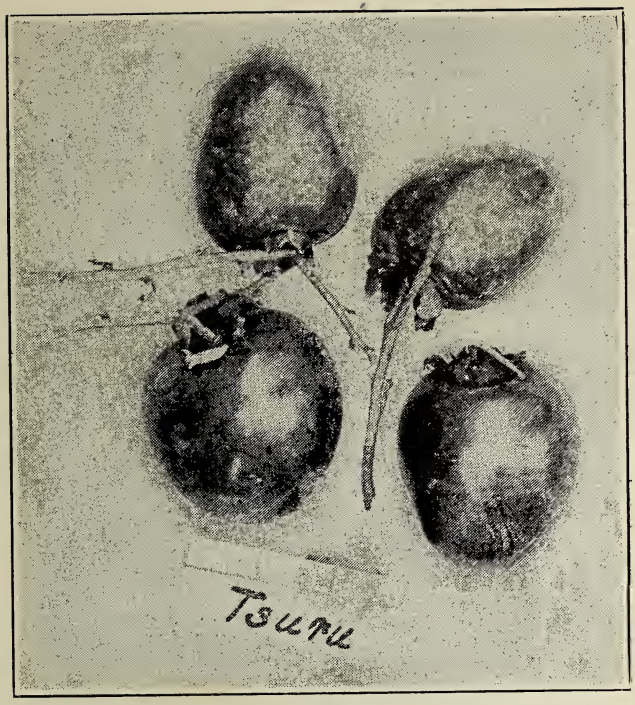
OKAME. (FIG. 6.)

TRIUMPH. (FIG. 8.)

This variety came to the Station under the name of a seedling of the honey persimmon, and was identified as the Triumph by Prof. H. Harold Hume of Glen St. Mary, Florida. It is one of the most vigorous and healthy trees among the Japanese varieties, is upright in growth and has beautiful large myrtle green leaves, free from disease. The fruit is rather small and flat, about two and one-half inches in diameter and of a beautiful bright yellow red color. Flesh is yellow and has seeds. (Fig. 3.) Slightly astringent until softening. The most delicious of the Japanese varieties. Season, September 20th to November 20th.

TANE NASHI. (FIG. 7.

TRIUMPH. (FIG. 8.)



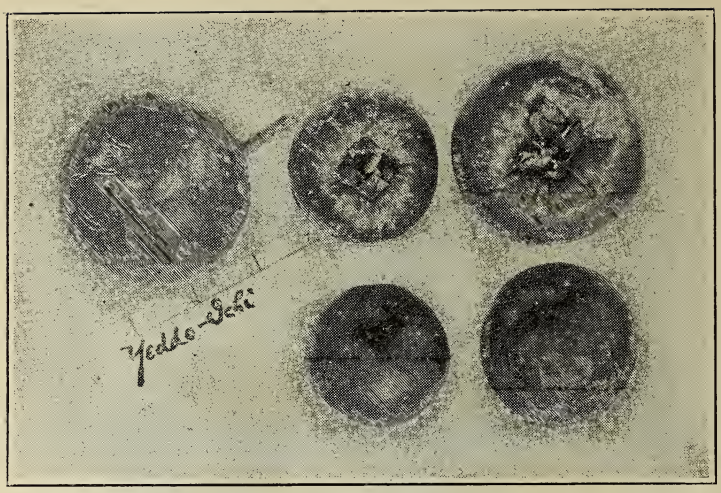
TSURU. (FIG. 9)

TSURU. (FIG. 9.)

While there may be some doubt that the figure shown under this name is the true *Tsuru,* but is believed that it is. It came to the Station as *Among,* but answers to the description given in the catalogues as *Tsuru.* It is long fruited, fully an inch longer than its diameter, which is about two and one-half inches. In color it is yellow red, and its flesh is on the same order. Most of the specimens are seedless. Very prolific. Season, October 1st to November 1st. (Fig. 3.)

YEDDO-ICHI. (FIG. 10.)

At the Station, this variety is medium in size and nearly round. It runs about two and one-half inches in diameter Color of skin dark, and flesh dark and brownish, and contains seeds. It is edible when hard, and has a very pleasant flavor.



YEDDO-ICHI. (FIG. 10.)

The tree is a good grower and is very prolific.

ZINGI. (FIG. 11.)

This is a very heavy bearing vigorous tree, and the fruit is nearly round, running about two and one-half inches in diameter. Color, medium red, and flesh darker with seeds. (Fig. 3.) Like the *Myotan,* it is edible when hard. Season, September 1st to October 1st.

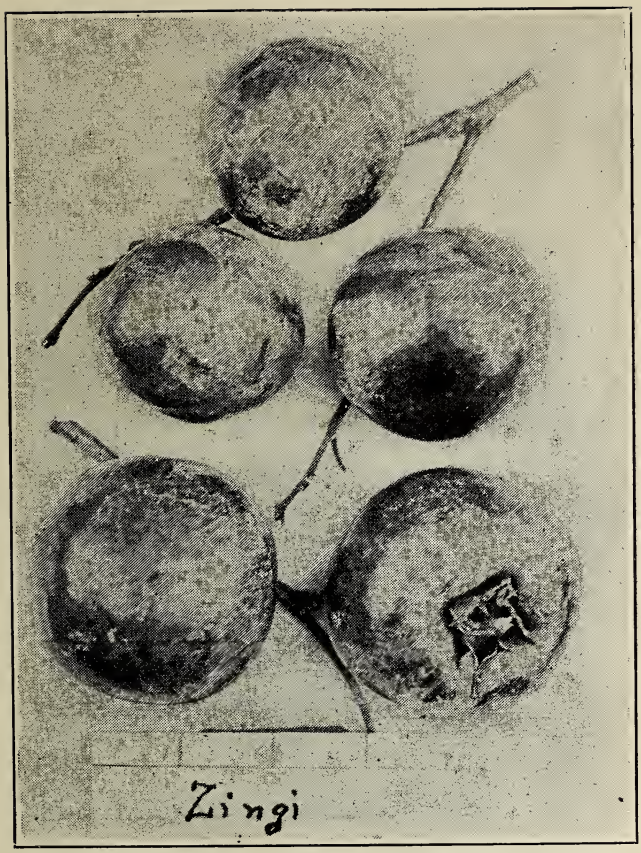
KORA KAMI.

The variety at the station under this name resembles the *Zingi* in many particulars, and possibly may be the same. The tree is not as vigorous or prolific as the *Zingi.* It was a weak grower and died after bearing three years.

SEEDLING. (FIG. 12.)

This variety was sent to us as a seedling. It is a very vigorous grower, with fruit nearly round, running from two and one-half to three inches in diameter, bright in color and flesh light, seedy and astringent. Season, September 10th to October 20th. Very prolific.

The persimmons shown in Figure 13 are various types of



ZINGI. (FIG. 11.)

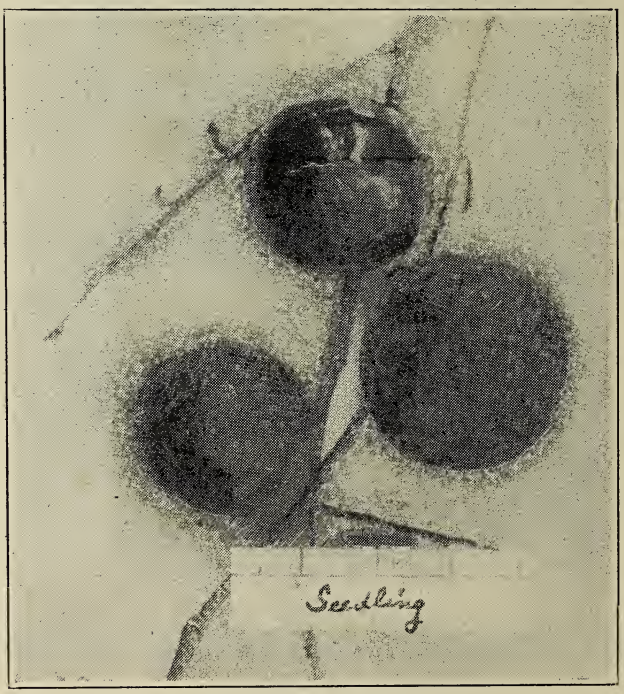
native persimmons, and are presented only to form a comparison of the native and foreign varieties.

In Figure 1 are shown specimens of *Diospyros Lotus,* the Chinese persimmon and the Honey, a variety of our American species.

THE FRUIT AND ITS TREATMENT.

As some of the varieties are edible before becoming soft, that is, they are not astringent, it follows that in the event of a Northern market, these varieties would be the most desirable to grow. To one not acquainted with persimmons, a single effort to eat an unripe specimen would be sufficient to prevent

any expansion of the market. It has been found that in Japan the astringent varieties are subjected to a method of treatment, by which the hard unripened fruit is confined in sealed recepticles for certain periods of time, after which upon removal, it is found that their astringency has disappeared. It has been found, too, that subjecting the astringent fruit to the fumes of certain chemicals will accomplish the same purpose.



SEEDLING. (FIG. 12.)

and while very small experiments were carried out at the Station this season, sufficient information was not obtained to warrant a statement at this time. It is sufficient to say that the treatment of the astringent fruit in order to correct the astringency is a problem that will be successfully solved in the very near future, thus removing the greatest hindrance to the growing of

Japanese persimmons, and the further expansion of an excellent market for them.

As a fruit they are rich in sugar, the different chemical analyses showing an average of about 16 per cent for the cultivated varieties. While this is slightly less than the percentage of sugar in our native varieties, it is much greater than the

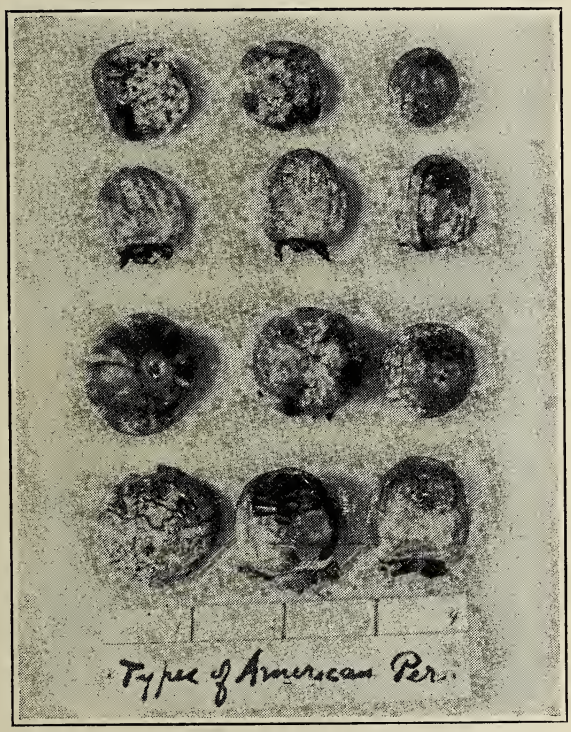


FIGURE 13.

amount found in apples, which average less than 8 per cent. An alcoholic beverage is made from them in Japan.

They ripen before frost in Louisiana—in fact, a frost is not necessary for their maturity, contrary to the prevailing belief.

ENEMIES AND DISEASES.

There are comparatively few enemies and diseases of a very

serious nature, that attack the Japanese persimmons. There are several leaf diseases, which nearly defoliate the trees very late in the season. As this occurs really about the time the leaves begin to fall, little damage is done. Some varieties are much more

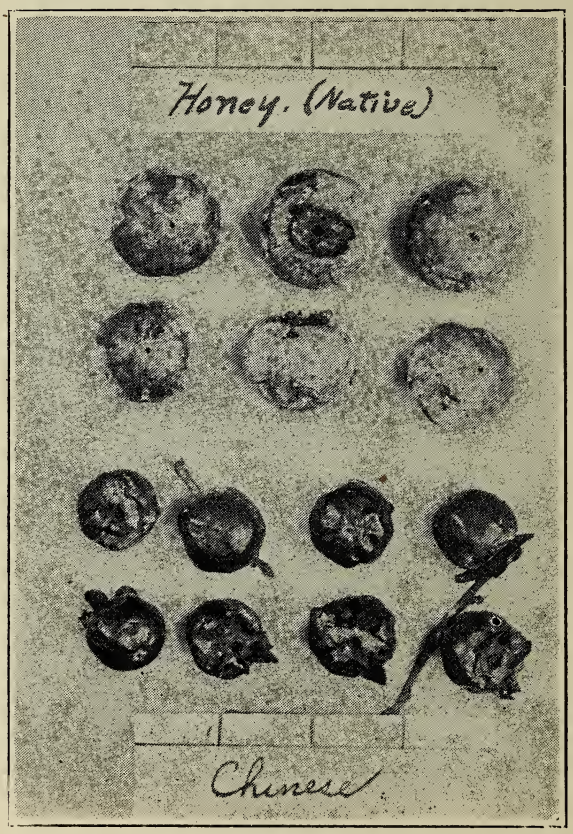


FIGURE 1.

resistant to fungous diseases than others. The seasons also vary, and some years the diseased leaves are hardly noticeable. In the event of serious trouble from leaf-destroying diseases, there is always a remedy at hand in the Bordeaux Mixture, which is universally used for the purpose of preventing or checking them.

Among the insect pests, the Twig Girdler (*Oncideres cingulatus*) is the one most frequently heard from. The female beetle, which is about one-half an inch long, and of a dark gray-brown color, deposits her eggs near the end of the young twigs, and girdles the twig below them.

In due time the twig dies, breaks off and the young hatch and come out. A few complaints have been made concerning the girdler. The remedy is to gather the twigs and burn them, not a very difficult task to do, and if the fallen leaves and broken twigs be raked and burned from each tree, not only will the Twig Girdler be under control, but the leaf diseases also will be held in check.

By far the most serious pest at the Station has been the mocking bird. At the time the Japanese persimmons are beginning to mature, there is a scarcity of food for them and they injure a great many.

Some years this becomes a serious question. To cover the trees with gauze is out of the question. No one would think of shooting the mocking bird as a pest, outside of the fact that it has legal protection. The remedy will come with the future treatment of the persimmon for market. Gathered while still hard, treated for astringency and put on the market while still solid but edible, the fruit will be cared for and put before the consumer before the mocking birds make any serious attacks upon them. While there are other birds which are troublesome, the one mentioned is the chief offender.

MARKET.

The Northern people love tropical and semi-tropical fruits. Our own people love a variety of fruits. The first Japanese persimmons put upon the markets in the South and the North were received with caution, yet when well ripened, were easily disposed of. The present sources of supply of these fruits are California, Florida and Louisiana, with California leading. While in our Southern markets they are found in bulk, the Californians pack and ship in neat crates. The California crate is similar to an egg crate, with capacity for 50, 36 or 32, according to the size of the fruit. The fruit is unwrapped and through the slats of the crates it makes a very good appearance, and the prospec-

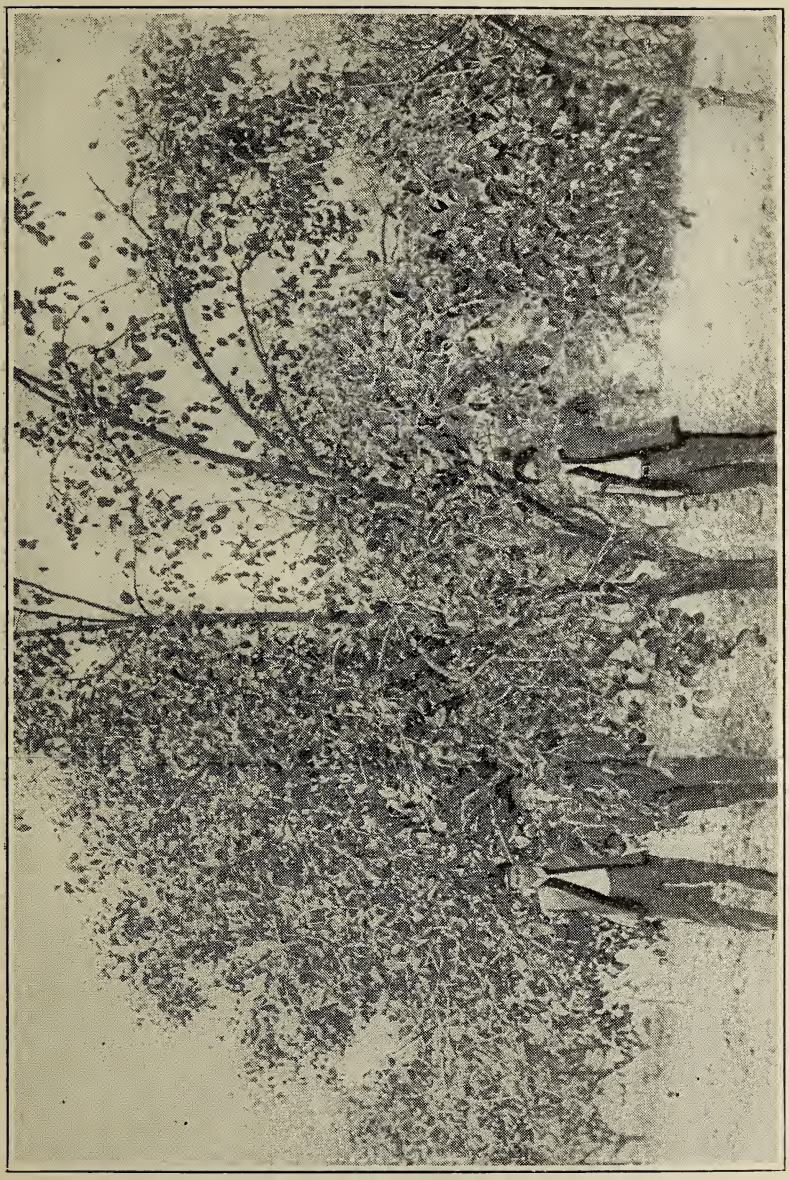
tive buyer can readily see the size, color and quality without breaking the package. These crates of persimmons sold in the Chicago market during November, 1907, for $1.10 to $1.30 per crate. This means a very good profit to the grower, and there is no reason to believe but that good Japanese persimmons, packed nicely, will continue to find a good market for some time to come. In bulk they bring about $1.00 to $2.00 per bushel, and by the dozen 30 to 80 cents.

USES.

While we are not fully acquainted with all the uses to which Japanese persimmons are put in their native country, it is quite probable that their use is as varied as is the case with apples in the Northern States. Its general use at the present time, however, is as a fresh fruit. When fully ripe, it may readily be eaten out of hand, but as some varieties are quite soft, the use of a spoon will facilitate matters greatly. Some prefer them served with cream. The non-astringent varieties may be pealed and eaten as a desert fruit, or sliced and served as a salad. Their characteristic flavor, varying in the different varieties, is found to be delicious by a great majority of people. Methods of preserving or evaporation have not been ascertained, but the latter is a common practice in Japan.

CONCLUSIONS.

1. Japanese persimmons may be grown with the greatest success in all sections of Louisiana.
2. They are easily grown, easily marketed and stand transportation well.
3. A ready market awaits them.
4. They are delicious as a salad or desert fruit.
5. A number of the varieties are not astringent, therefore may be eaten while still hard.
6. Astringent varieties will soon be treated so as to correct this undesirable quality.
7. They have comparatively few diseases and enemies.
8. They are valuable as an ornamental tree in the home yard.



JAPANESE PERSIMMON TREE IN FRUIT.